Title: BY-PRODUCT FUEL DELIVERY ASSEMBLY

Abstract: The present invention is directed to a by-product fuel delivery assembly (5) for delivering by-product fuel to a fluidised bed unit (3), the by-product fuel delivery assembly comprising a fuel hopper (25), a fuel conveyor (29) and a fuel metering device (27). The fuel hopper comprises a fuel feed mechanism (71) that comprises a plurality of laterally arranged push bars (55) and a plurality of laterally arranged stop bars (57). The push bars and stop bars co-operate to feed by-product fuel sitting on the base of the fuel hopper along the base of the fuel hopper towards the discharge slot (59) of the fuel hopper and provides a simple, effective, low-cost and low maintenance solution to the problem of feeding by-product fuel from the fuel hopper. The invention is also directed to embodiments of the fuel conveyor using a link chain (95) and a fuel metering unit using a pair of contra rotating fuel feed augers (75, 77).
Date of publication of the international search report:
28 October 2010
INTERNATIONAL SEARCH REPORT

PCT/EP2009/062855

A. CLASSIFICATION OF SUBJECT MATTER

INV. F23K3/00
B65G25/08
B65G65/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F23K B65G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
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<tbody>
<tr>
<td>X</td>
<td>US 4 461 606 A (CORMACK ALEXANDER D [US]) 24 July 1984 (1984-07-24) column 1, line 11 - column 2, line 24; figures 1,2</td>
<td>1,5-8, 10,11, 13,14</td>
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<td>X</td>
<td>DE 40 08 287 A1 (ROMPF KLAERWERKEINRICHTUNGEN G [DE]) 19 September 1991 (1991-09-19) column 3, line 20 - column 4, line 2; figures 1-3</td>
<td>1-3,6-14</td>
</tr>
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</table>

Further documents are listed in the continuation of Box C

See patent family annex

* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referred to in an oral disclosure, use exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

*"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"A" document member of the same patent family

Date of the actual completion of the international search

18 May 2010

Date of mailing of the international search report

09/09/2010

Name and mailing address of the ISA

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Fax (+31-70) 340 3016

Authorized officer

Theis, Gilbert
### Box No. II  Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos. because they relate to subject matter not required to be searched by this Authority, namely

2. Claims Nos. because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically

3. Claims Nos. because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 64(a)

### Box No. III  Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

*see additional sheet*

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims, it is covered by claims Nos.

*see additional sheet(s)*

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

Form PCT/ISA/21Q (continuation of first sheet (2)) (April 2005)
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-14

A by-product fuel delivery assembly comprising a fuel hopper, a fuel conveyer and a fuel metering device, wherein the fuel hopper comprises a plurality of laterally arranged stop bars that are mounted on the base of the fuel hopper and wherein the plurality of push bars protruding perpendicularly from a spine are arranged in pairs, one on either side of the spine and are offset with respect to each other in a non-linear manner.

2. Claims: 15-23

A by-product fuel delivery assembly comprising a fuel hopper, a fuel conveyer and a fuel metering device, wherein the fuel conveyer comprises a box-shaped conduit having a substantially flat floor and a proximal end adjacent the fuel hopper and a distal end adjacent the fluidised bed unit, and a continuous link chain looped around a pair of end sprockets is located within the conduit, the link chain mounting a plurality of by-product fuel moving paddles thereon; and wherein the fuel conveyer further comprises a plurality of intermediary sprockets, having a smaller diameter than the end sprockets, which engage a lower section of the looped link chain to guide the lower section of the looped link chain and hold the corresponding by-product fuel moving paddles substantially in abutment against the flat floor of the fuel conveyer.
# INTERNATIONAL SEARCH REPORT

Information on patent family members

<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
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<tbody>
<tr>
<td>US 4461606 A</td>
<td>24-07-1984</td>
<td>NONE</td>
<td></td>
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<td>DE 4008287 A1</td>
<td>19-09-1991</td>
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Form PCT/ISA210 (patent family annex) (April 2005)